

## In Debt and Approaching Retirement: Claim Social Security or Work Longer?<sup>†</sup>

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Since the 1980s, indebtedness of American households approaching retirement has increased dramatically—a trend likely to have important implications for retirement income security. On one hand, financial obligations might compel some older adults to keep working and delay Social Security benefit claiming into their mid-sixties and beyond so they can pay off their debts. On the other hand, older adults who are unable to service their debts might claim their benefits as soon as they are eligible in order to obtain the necessary cash to make their loan payments.

The age at which individuals first claim Social Security benefits and the age at which they retire can have significant implications for their income in retirement and for the Social Security system. People can begin collecting Social Security worker benefits as early as age 62, but early claimants receive lower monthly benefits for the rest of their lives.<sup>1</sup> In contrast, workers who postpone starting their benefits until after their full retirement age (FRA) receive permanently higher monthly benefits via accrued

delayed retirement credits.<sup>2</sup> Moreover, delayed claiming can confer substantial financial gains to most older adults who continue working. The additional earnings from working longer can also generate income and payroll tax revenues that help finance the Social Security system.<sup>3</sup>

Whereas a broad literature exists on the determinants of early claiming, optimal claiming ages, and retirement timing, the link between indebtedness and older adults' labor supply and Social Security benefit receipt has received relatively little attention.<sup>4</sup> As the level of indebtedness among older households rises, understanding this relationship is especially important.

This paper contributes to the literature by empirically testing the effect of household indebtedness on the timing of benefit claiming and retirement. It also contributes to a literature dominated by studies examining the importance of liquidity constraints on consumption. More recent studies show evidence of households adjusting both consumption and labor supply in the presence of borrowing constraints. This paper conceptualizes early claiming as a possible strategy households can use to relax their borrowing constraints and achieve better consumption smoothing.

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<sup>1</sup>Beneficiaries who work before reaching their full retirement age (FRA) might also see their benefits reduced as a result of the Social Security earnings test. In 2014, benefits were reduced \$1 for every \$2 earned above \$15,480 for beneficiaries under their FRA.

<sup>2</sup>Previous literature has found delaying Social Security is advantageous to a large number of people (Shoven and Slavov 2014).

<sup>3</sup>Despite evidence of increased labor force participation of older adults in the last couple of decades and an increase in the average age of benefit claiming, early claiming remains commonplace today with more than half of all Social Security beneficiaries claiming their benefits before reaching the FRA (Social Security Administration 2017, Table 6.B5). Butrica, Smith, and Steuerle (2007) estimate that delaying retirement by one year would increase annual retirement income by about 9 percent and reduce the Social Security deficit in 2045 by 2 percent.

<sup>4</sup>More recently, Lusardi and Mitchell (2016) report a link between mortgage debt and expectations of working longer among older women.

The article uses over two decades of biennial data from the Health and Retirement Study (HRS) to examine how debt influences labor supply and claiming decisions of older adults nearing retirement. We find that on average older adults with debt, particularly those with mortgages, are more likely to work and less likely to receive Social Security benefits than those without debt. Indebted older adults are also more likely to delay fully retiring from the labor force and to delay claiming their benefits.

**I. Data**

Our analysis is based on the 1992 through 2014 waves of the HRS, a biennial nationally representative survey of Americans ages 51 and older. In addition to detailed information on personal characteristics, employment, earnings, income, and program participation, the HRS provides detailed information on various types of household assets and debt. In the empirical specifications, we separate mortgage debt on the primary residence from other debt, where other debt includes the mortgage on any secondary residence, credit card balances carried over from one month to the next, unpaid medical bills, life insurance policy loans, and loans from relatives and other sources.

The HRS data shows that Americans are increasingly likely to have debt at older ages. Between 1998 and 2014, the share of adults ages 62 to 69 with any type of debt increased by about 16 percentage points and the median value of debt more than doubled. The median value of outstanding mortgages, a major source of debt for households in this age group, increased by 72 percent and the share of older adults with mortgages rose by 13 percentage points.<sup>5</sup> Overall, households' average indebtedness—measured as the ratio of total debt to total assets—increased considerably during the period (Figure 1).

**II. Methods**

Our empirical specifications are motivated by a simple conceptual framework, as in Butrica and Karamcheva (2013), in which a

<sup>5</sup>Throughout the examined period, mortgage debt remained the most significant source of debt for individuals in this age group, accounting for about 80 percent of aggregate household debt. Roughly 90 percent of individuals in this age group are homeowners in each of these survey years.

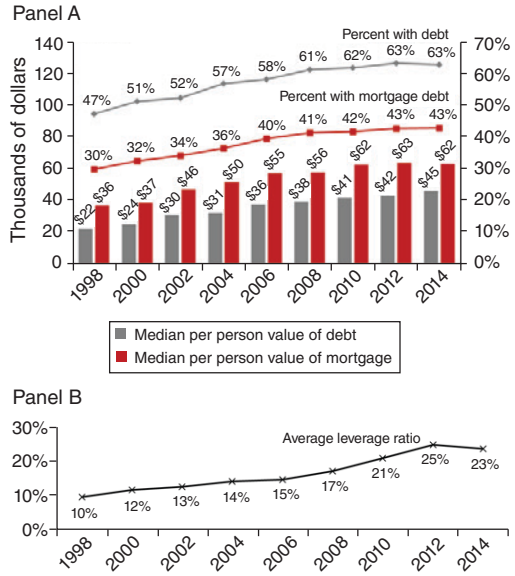


FIGURE 1. SHARE OF INDIVIDUALS WITH DEBT, MEDIAN VALUES OF DEBT FOR THOSE WITH DEBT AND AVERAGE LEVERAGE RATIOS: ADULTS AGES 62 TO 69

Notes: Dollar amounts are expressed in 2014 real dollars, adjusted by the change in the consumer price index research series. Per person values for the sample are calculated by dividing the corresponding household values by two for individuals who are part of a couple. The top 0.5 percent of the sample with the highest leverage ratios is excluded from the calculation.

Source: Authors' calculations using 1998–2014 HRS

utility maximizing individual when faced with a binding borrowing constraint will respond by adjusting consumption, labor supply, and/or the timing of Social Security benefit claiming. The option of early claiming and thus accessing some retirement income sooner would provide such an individual with an additional way to relax the borrowing constraint and achieve better consumption smoothing. A testable implication of this framework is that an individual's decision to work more, claim benefits early, or both is a function of how binding the borrowing constraint is, among other factors.<sup>6</sup>

<sup>6</sup>Borrowing constraints can affect both the intensive and extensive margins of labor supply. The analysis in this paper examines only the extensive margin response, with the intensive margin response being a natural avenue for future research.

In the empirical specifications, our main variable of interest is the presence of household debt. Thus, our implicit assumption is that households with debt are more likely to have borrowing or liquidity constraints than those without debt. Our measures are, at best, proxies for borrowing constraints and we cannot rule out the possibility that any observed effects of debt are due to other reasons.<sup>7</sup>

The econometric specifications model the extensive margin of labor supply (probability of working), as well as the probability of receiving Social Security benefits. We also model the length of time until full withdrawal from the labor force and until initial Social Security claiming via a set of discrete-time proportional hazard models. To account for the potential endogeneity of debt, we estimate a set of fixed effects and instrumental variable models.

We restrict our sample to non-disabled individuals ages 62 to 69 because they are age-eligible to collect Social Security retired worker benefits. We further restrict the sample to individuals we can observe beginning at age 62 to avoid left-censoring in the estimation of the hazard models.

### A. Latent Variable Models

We model the propensity to work and the propensity to collect Social Security benefits as latent variables  $y^*$  which are functions of demographic and socioeconomic characteristics  $X$  and liquidity constraints  $Lc$ .

$$(1) \quad y_{it}^* = X_{it}\beta + Lc_{it}\gamma + \varepsilon_{it}$$

$$y_{it} = 1[y_{it}^* > 0].$$

To allow for potential correlation between work and benefit receipt, we model the two equations jointly in a bivariate probit model.

<sup>7</sup>For example, we are not able to separately identify wealth and liquidity effects. However, wealth and liquidity effects work in the same direction with regard to labor supply, but opposite directions with regard to the benefit claiming decision. Thus, finding a positive effect of debt on early claiming would provide us with stronger evidence for the presence of borrowing or liquidity constraints.

### B. Duration Models

To capture the effect of debt on individuals' timing of retirement and Social Security claiming, we estimate a set of duration models. We observe spells for each individual starting at age 62 and ending when the person exits the spell, drops out of the survey, or reaches age 69.

In this framework, the hazard function  $h(t)$  represents the instantaneous probability of exiting the spell in the time interval  $dt$  given that the individual remains in the spell at time  $t$ . The functions  $f(t)$  and  $F(t)$  denote the density and cumulative density functions, respectively.

$$(2) \quad h(t) = \Pr(t \leq T < t + dt | T \geq t) = \frac{f(t)}{1 - F(t)}.$$

We adopt a proportional hazard parametrization for the hazard function

$$(3) \quad h(t) = h_0(t)h(X_{it}\beta + Lc_i\gamma),$$

where  $h_0(t)$  is the baseline hazard, which we estimate non-parametrically using duration dummies. In this model, the baseline hazard shifts proportionately with changes in the right-hand-side variables. Given that our data on work and Social Security receipt are reported in discrete biennial time intervals, we use the discrete-time duration model as proposed by Beck, Katz, and Tucker (1998).<sup>8</sup>

### C. Potential Endogeneity of Debt

There are reasons to think that having debt or being liquidity constrained is not strictly exogenous, for example due to reverse causality. To address such endogeneity concerns, we take two approaches.

First, utilizing the panel nature of our data we estimate fixed effects models that account for unobserved heterogeneity potentially correlated with having debt. We model the propensity to

<sup>8</sup>We use the probit specification to maintain the joint normality assumption of the errors in the two equations in the IV duration model. Whereas the complementary log-log (cloglog) specification is the discrete time analogue of the continuous time Cox proportional hazard model, the binary discrete choice models, such as logit and probit, provide a similar fit to the data (see Beck, Katz, and Tucker 1998).

TABLE 1—MARGINAL EFFECTS OF DEBT ON PROBABILITY OF WORK AND SOCIAL SECURITY BENEFIT RECEIPT

	Bivariate probit	Bivariate probit	Linear fixed effects	IV Model
	All	Only homeowners	Only homeowners	Only homeowners
<i>Outcome = probability of working</i>				
Has debt	0.0746 (0.0069)			
Has other debt		0.0443 (0.0070)	0.0148 (0.0063)	0.0444 (0.0064)
Has mortgage debt		0.0682 (0.0079)	0.0202 (0.0092)	0.0264 (0.0809)
$\rho$				0.0728 (0.142)
Wald test of exogeneity				Pr > $\chi^2 = 0.6094$
<i>Outcome = probability of receiving social security benefits</i>				
Has debt	-0.0182 (0.0052)			
Has other debt		-0.0045 (0.0052)	-0.0118 (0.0059)	-0.0049 (0.0033)
Has mortgage debt		-0.0311 (0.0058)	-0.0174 (0.0089)	-0.0521 (0.0349)
$\rho$				0.0554 (0.0822)
Wald test of exogeneity				Pr > $\chi^2 = 0.5017$

*Notes:* Robust standard errors are in parentheses. Errors are clustered on individuals in non-IV models and on census divisions in IV models. All specifications include controls for sex, age, education, marital status, spouse's earnings and claiming status, self-reported health, whether respondent's age is above the FRA, other income, net worth, and time dummies. Instruments in the IV model pass overidentification tests and tests for weak instruments.

*Source:* Authors' calculations using 1992–2014 HRS

work and to receive benefits as linear probability panel data models.

Second, we instrument for the endogeneity of mortgage debt in both the latent variable and duration models with a set of variables  $Z_{gt}$  that capture the variation over time and across census regions in housing markets and thus are plausible determinants of the likelihood of having mortgage debt, but do not directly affect work or claiming decisions.<sup>9</sup>

Assuming joint normality of the errors in the outcome equation and the equation that models the probability of having mortgage debt, we

estimate the latent variable IV and the duration IV models as bivariate probit models.<sup>10</sup>

$$(4) \quad Lc_{it}^* = X_{it}\delta + Z_{gt}\theta + \epsilon_{it}.$$

### III. Results

Regression results from the models on the probability of work and benefit receipt show that having debt is positively and significantly correlated with individuals' propensity to work and negatively and significantly correlated with their likelihood of receiving Social Security benefits (Table 1). Among the sources of debt, mortgage debt has a stronger impact on the probability of work (increasing it by 7 percentage points) and Social Security receipt (decreasing it by 3 percentage points) than do other sources of debt.<sup>11</sup>

<sup>9</sup>We matched the HRS sample with data from the Federal Housing Finance Agency and used instruments that capture average effective interest rates, average purchase price, and the house price index. We instrument the mortgage constraints, instead of total or other debt, because of lack of good instruments on access to other debt. Moreover, mortgage debt consistently had the strongest impact on work and benefit receipt in all our specifications.

<sup>10</sup>The bivariate probit in this context was first proposed by Heckman (1978).

<sup>11</sup>For context, 44 percent of individuals in our sample work and 64 percent receive Social Security benefits.

TABLE 2—ESTIMATES FROM HAZARD MODEL OF FULL RETIREMENT AND OF SOCIAL SECURITY CLAIMING

	Non-IV model	Non-IV model	IV Model
	All	Only homeowners	Only homeowners
<i>Outcome = hazard of full retirement</i>			
Has debt	-0.0863 (0.0244)		
Has other debt		-0.0575 (0.0248)	-0.0427 (0.0299)
Has mortgage debt		-0.0937 (0.0251)	-0.2377 (0.2270)
Wald test of exogeneity			Pr > $\chi^2 = 0.4893$
<i>Outcome = hazard of claiming social security benefits</i>			
Has debt	-0.0808 (0.0233)		
Has other debt		0.0287 (0.0238)	0.0042 (0.0313)
Has mortgage debt		-0.1285 (0.0241)	-0.3569 (0.2960)
Wald test of exogeneity			Pr > $\chi^2 = 0.4328$

*Notes:* Robust standard errors are in parentheses. Errors are clustered on individuals in non-IV models and on census divisions in IV models. Debt and homeownership are captured at the beginning of the spell and do not vary over time. All specifications include controls for sex, age, education, marital status, spouse's earnings and claiming status, self-reported health, whether respondent's age is above the FRA, other income, net worth, and time dummies. Instruments in the IV models pass overidentification tests and tests for weak instruments.

*Source:* Authors' calculations using 1992–2014 HRS

Estimates from the fixed effects models are similar in direction and significance but smaller in magnitude than estimates from the models that did not account for unobserved heterogeneity.

Instrumenting for the probability of having a mortgage produces estimates of the effects of mortgage debt on work and benefit receipt that are similar in direction to the non-IV model but not statistically significant. However, the Wald test of exogeneity suggests that we cannot reject the hypothesis of no endogeneity in our model, which makes the non-IV model our preferred specification.

Results from the duration models show that having a mortgage at age 62 reduces the hazard of fully exiting the labor force and reduces the hazard of claiming Social Security benefits. The results translate into a delay in full retirement of about 5 months and a delay in benefit claiming of about 4 months, on average, for

homeowners with mortgages compared with homeowners without mortgages. In contrast, the effect of other debt is not statistically significant (Table 2).

Results from the IV duration model are similar in direction to the non-IV model, but the mortgage variable loses significance. Again, we cannot reject the null hypothesis that having a mortgage is exogenous, which makes the non-IV model our preferred specification.

#### IV. Summary and Discussion

Older Americans have become considerably more leveraged over the past couple of decades. Higher levels of debt at older ages could have important implications for retirement income security and for the financing of the Social Security system if household debt affects the timing of retirement and Social Security benefit claiming for current and future retirees.

Using data from the HRS, this study finds evidence that older adults may be dealing with their indebtedness by delaying their retirement and Social Security benefit receipt. Most of the effect appears to be driven by mortgage debt and less so by other forms of debt. However, the levels of debt and the sources of other debt, such as credit cards or educational loans, could have differential impacts on older adults' labor supply and claiming decisions. Those questions present interesting avenues for future research.

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